POOR LEGIBILITY

ONE OR MORE PAGES IN THIS DOCUMENT ARE DIFFICULT TO READ
DUE TO THE QUALITY OF THE ORIGINAL

TT-R-251a

AUGUST 28, 1942

SUPERSEDING
Fed. Spec. TT-R-251
April 2, 1935

FEDERAL STANDARD STOCK CATALOG

Section IV

(Part 5)

FEDERAL SPECIFICATION

FOR

REMOVER; PAINT AND VARNISH (ORGANIC-SOLVENT-TYPE)

This specification was approved on the above date by the Director of Procurement, for the use of all departments and establishments of the Government, and shall become effective not later than Feb. 1, 1943. It may be put into effect, however, at any earlier date after promulgation.

A. APPLICABLE SPECIFICATIONS.

A-1. The following Federal specifications, of the issue in effect on date of invitation for bids, shall form a part of this specification:

TT-P-141. Paint, Varnish, Lacquer and Related-Materials; general specifications. (Methods for sampling and testing).
TT-T-291. Thinner; paint, volatile-mineral-spirits.
JJJ-O-331. Oil; linseed, boiled.
LLL-T-791. Turpentine; gum-spirits and wood (steam distilled and sulfate), (for) paint.

B. TYPES AND CLASSES.

B-1. This specification covers the following types and classes of organic-solvent-type of paint and varnish remover. The types and classes shall be stated in the invitation for bids. (See Notes I-1 and I-3).

Type I. Flammable.
Class A. Thin liquid (for use on horizontal surfaces).
Class B. Semipaste (for use on vertical and overhead surfaces).
Type II. Nonflammable.

C. MATERIAL.

C-1. This specification covers paint and varnish removers made of suitable mixtures of organic solvents, with wax or other retarders of evaporation.

482287—42

D. GENERAL REQUIREMENTS.

D–1. See Detail Requirements.

E. DETAIL REQUIREMENTS.

E–1. *Condition in container.*—Shall meet the requirements of paragraph F-2a.

E–2. *Nonvolatile matter.*—

Type I. Class A—Not more than 7 percent by weight.
Type I. Class B—Not more than 15 percent by weight.
Type II. Not more than 5 percent by weight.

E–3. *Ash.*—Not more than 0.1 percent by weight.

E–4. *Loss by evaporation.*—

Type I. Class A—Not more than 2.5 percent by weight.
Type I. Class B—Not more than 3.5 percent by weight.
Type II. Not more than 25 percent by weight.

E–5. *Performance test.*—Shall remove at least 95 percent of the specified coating under the conditions of test specified in paragraph F-2e.

E–6. *Stability.*—Shall meet the test described in paragraph F–2f.

E–7. *Alkalies, mineral acids and carbon tetrachloride.*—Shall not be present (see paragraph F–2g).

E–8. *Retardant residue.*—Shall meet the requirements of paragraph F–2h.

E–9. *Effect on wood.*—Shall not stain or raise the grain of the wood. (See paragraph F–2i).

E–10. *Nonflammability (type II only).*—Shall show no flash point below 260° C (500° F), or if the remover boils below this temperature, it shall show no flash up to and including its maximum boiling temperature. (See paragraph F–2j).

F. METHODS OF SAMPLING, INSPECTION, AND TESTS.

F–1. *Sampling.*—A single unit out of each lot of not more than 500 units shall be taken as representative of the whole.

F–1a. Since, especially in cold weather, there may be some separation or settling out of the nonvolatile content, it is advisable, whenever possible, to send the unopened container to the laboratory for test. When this is not done, the inspector should store the sample package in a reasonably warm room, not below 20° C (68° F) for a long enough time to have the contents come to the temperature of the room. Then thoroughly mix the contents and transfer not less than 1 pint to a clean dry glass bottle or tin can, which must be nearly filled with the sample, securely stoppered with a new clean cork or well-fitting cover or cap, sealed and distinctly labeled by the inspector. The inspector should take a duplicate from the container sampled to be held for check in case of dispute and, when requested, should take a sample for the seller.

F–2. *Tests.*

F–2a. *Condition in container.*—Examine the sample of remover as received by gently stirring the contents of the container with a glass rod or spatula. Note whether any caking in the bottom of the container, clotting or gelling has occurred. If such is the case, bring the container and contents to a temperature of 25° ±2° C (77° ±4° F) and hold for at least 2 hours. Thoroughly agitate the contents by shaking. Remove the top and reexamine as before. There shall be no caking, all clots or gel-like masses shall have been broken up and the remover shall have a reasonably uniform and homogeneous appearance.

F–2b. *Nonvolatile matter.*—Place a portion of the thoroughly mixed sample in a stoppered bottle or weighing pipette. Weigh container and sample. Transfer about 5 grams of the sample to a weighed porcelain crucible. Weigh container again and by difference calculate the exact weight of the portion of sample transferred to the weighed crucible. Heat the crucible on a steam bath for 30 minutes and then in an oven at 105° ±2° C (221° ±4° F) for 1 hour, cool and weigh. From the weight of the residue left in the crucible and the weight of the sample calculate the percentage of nonvolatile matter.

F–2c. *Ash.*—Heat the crucible containing the nonvolatile matter until all organic matter is burned off, using only moderate heat, cool and weigh. From the weight of the residue left in the crucible and weight of sample (see paragraph F–2b) calculate the percentage of ash.

F–2d. *Loss by evaporation.*—Place a portion of the thoroughly mixed sample in a stoppered bottle or a weighing pipette. Weigh container and sample. Transfer approximately 5 grams, accurately weighed, of the sample to a weighed flat-bottomed dish (a Petri dish about 9 cms in diameter is satisfactory). Allow the dish and contents to stand undisturbed and unexposed to excessive air currents or drafts at a temperature of 21 to 32° C (70 to 90° F) for 30 minutes. Reweigh the dish and contents and from the loss in weight and the weight of the sample compute the percentage loss by evaporation.

F–2e. *Performance test.*—

F–2e (1). *Preparation of test panels.*—Cut, mark and accurately weigh 4 strips of bright tin plate (Reagent 501. 1 of Federal Specification TT–P–141) approximately 1 by 6 inches (2. 5 by 15 cms), avoiding rough or ragged edges and rounding off one end of each of the metal strips to assure satisfactory drainage of oil. Immerse the strips in boiled linseed oil conforming to Federal Specification JJJ–O–331 and after removing the strips from the oil hang in a vertical position. Allow to drain and dry at 21 to 32° C (70 to 90° F) for 24 hours. Bake the air-dried panels in a properly ventilated oven at 130° ±2° C (266° ±4° F) for 24 hours. Remove the coated strips from the oven and allow to cool to room temperature and weigh. Record the weight of the coating on the individual strips. Allow the coated strips to remain at room temperature approximately 4 hours before subjecting them to the following test.

F–2e (2). *Removal of oil coating.*—Thoroughly mix the sample of remover to be tested, which shall have been kept at a temperature of 21° to 32° C (70° to 90° F) for several hours. Quickly pour a portion of the remover into a test tube of suitable size and then immerse and immediately withdraw each panel. Hang the panels after immersion in a vertical position for 15 minutes. During this time period the panels should be kept at a temperature of 21 to 32° C (70 to 90° F) and protected from excessive drafts. Now wipe the loosened coating from the metal strips with a clean dry pad of cheesecloth using gentle

tout firm pressure, making sure that all loosened material as well as the residual retardant is completely removed. Do not scratch or scrape the coating in an effort to remove that portion that tends to adhere tightly to the metal. Allow the panels to dry for ½ hour at room temperature and reweigh. From the weight of residual coating and the weight of original coating on the respective panels calculate the average percentage of coating removed.

F-2f. *Stability.*—Thoroughly mix the remover and immediately fill three 6-inch (15-cm) test tubes to within about 2 inches (5.0 cm) of the top with portions thereof and tightly stopper the tubes. Place one of the tubes in a water bath at a temperature of 38° ±2° C (100° ±4° F) and allow to remain for 1 hour. Place the second tube in a refrigerator maintained at −10° ±2° C (14 ±4° F) for the same length of time. At the end of the one hour period bring all three tubes to a temperature of 25° ±2° C (77° ±4° F) and allow the tubes to remain at this temperature for 1 hour. Observe any differences in appearance, such as variations in the rate or amount of settling of suspended matter and separation into layers, of the remover within the respective tubes. If no marked differences occur, the material will be considered satisfactorily stable. Whenever distinct variations in the general appearance occur all of the tubes should be thoroughly shaken for 1 minute each, returned to the rack and allowed to stand undisturbed for one hour at 25° ±2° C (77° ±4° F). Observe the contents of the tubes at 15 minute intervals during this one hour period. Any distinct variations in general appearance between the portions of remover which had been either heated or chilled and the original portion at any one of these four observation periods will be considered objectionable, and the material considered unsatisfactory with respect to the stability requirement.

F-2g. *Alkalies, mineral acids and carbon tetrachloride.*—Any reliable qualitative tests may be employed for the detection of these materials, the presence of any one of which shall be considered sufficient cause for rejection.

F-2h. *Retardant residue.*—Pour about 25 g. of the thoroughly mixed remover into a shallow dish and place on a steam bath. After most of the volatile constituent has been driven off, heat the dish and contents in an oven at 105° ±2° C (221° ±4° F) for one-half hour. Remove and cool to room temperature. The residue in the dish shall be examined for solubility in both turpentine (Fed. Spec. LLL-T-791) and Volatile Mineral Spirits (Fed. Spec. TT-T-291). Any portion of this residue not readily and completely soluble must be of such a nature that it will have no injurious effect on paint, varnish or lacquer films that may be applied over it.

F-2i. *Effect on wood.*—Spot a strip of clean maple wood flooring in several places with a few drops of the thoroughly mixed remover. Allow the remover to remain in contact with the wood for 15 minutes. Remove that portion of the remover remaining on the wood using first filter paper to blot off the excess and then lightly sponging the affected areas with a pad of cheesecloth wetted with either mineral spirits (Fed. Spec. TT-T-291) or turpentine (Fed. Spec. LLL-T-791). Allow the panel to remain at room temperature for at least one hour to insure complete evaporation of the cleaning solvent and examine.

There shall be no staining effect and the grain of the wood shall not have been raised at the spotted areas.

F-2j. *Nonflammability.*—Determine nonflammability by the absence of any flash point below 260° C (500° F) using method 260.1 outlined in Federal Specification TT-P-141.[1]

G. PACKAGING, PACKING, AND MARKING FOR SHIPMENT.

G-1. Unless otherwise specified, commercial packages are acceptable under this specification.

G-2. *Packing.*—Unless otherwise specified, the subject commodity shall be delivered in standard commercial containers so constructed as to insure acceptance by common or other carrier, for safe transportation, at the lowest rate, to the point of delivery.

G-3. *Marking.*—

G-3a. *Issue packages.*—Unless otherwise specified, each package shall be marked with the name of the material, brief instructions concerning the purpose for which used and directions for use, the quantity contained therein, and the name of the manufacturer.

G-3b. *Shipping containers.*—Unless otherwise specified, shipping containers shall be marked with the name of the material and the quantity contained therein, as defined by the contract or order under which the shipment is made, the name of the contractor, and the number of the contract or order.

H. REQUIREMENTS APPLICABLE TO INDIVIDUAL DEPARTMENTS.

H-1. The following departmental specifications of the issue in effect on date of invitation for bids, shall form a part of this specification.

H-2. *Army.*—U. S. Army Specification No. 100-2, Standard Specification for Marking Shipments. (Copies of this specification may be obtained by prospective bidders, without cost, upon application to the distributing agency indicated in the invitation for bids.)

H-3. *Navy.*—Navy Department General Specification for Inspection of Material, copies of which may be obtained without cost upon application to the Bureau of Supplies and Accounts, Navy Department, Washington, D. C.

H-3a. *Packing.*—Unless otherwise specified, the subject commodity shall be delivered in substantial standard commercial containers of the type, size, and kind commonly used, so constructed as to insure safe delivery by common or other carrier to the point of delivery at the lowest rate and to withstand storage, rehandling, and reshipment without the necessity for further packing.

H-3b. *Marking.*—

H-3b (1). *Issue packages.*—Unless otherwise specified, each package shall be marked with the name of the material, the type, the class, the quantity contained therein, the name of the manufacturer, and

[1] When the remover is found to boil at a temperature appreciably below 260° C (500° F) because of the presence of constant boiling mixtures and the specified procedure with reference to the temperature rise of the sample within the cup can not be followed, heating shall be continued and the emitted vapors tested as outlined until all the solvent has been driven from the cup. If no flashing occurs during the entire operation the remover shall be considered nonflammable.

brief instructions concerning the purpose for which used and directions for use. If Type I, each package shall be marked "Flammable"; and, if Type I, Class A, each container shall be marked, in addition, "*Shake well*".

H-3b (2). *Shipping containers.*—Unless otherwise specified, shipping containers shall be marked with the name of the material, the type, the class, and the quantity contained therein, as defined by the contract or order under which shipment is made, the name of the contractor, the number of the contract or order, and the gross weight.

I. NOTES.

I-1. Purchasers should exercise any desired options offered herein and should specify the type and class of paint and varnish remover required.

I-2. Paint and varnish removers specified herein are generally intended for use indoors, but may be used out of doors under such working conditions as will warrant their efficient and economical use.

I-3. Type I paint and varnish removers are intended for use in such places as are relatively free of fire hazards, whereas the use of Type II remover is advised in places where heated pipes, live wires, and other ignition media are to be encountered.

I-4. Since the volatile constituents of the paint and varnish removers specified herein are necessarily more or less toxic, proper ventilation at all times is considered imperative.

I-5. Paint and varnish remover (organic-solvent type) should be purchased by volume in units of 1 pint, 1 quart, 1 gallon or 5 gallons as specified in the contract.

I-6. The label of each container should bear brief instructions concerning the purpose for which the paint and varnish remover is intended; directions for its use; the words "Shake Well", and in case of Type I Class A remover the word "Flammable".

I-7. It is believed that this specification adequately describes the characteristics necessary to secure the desired material, and that normally no samples will be necessary prior to award to determine compliance with this specification. If, for any particular purpose, samples with bids are necessary, they should be specifically asked for in the invitation for bids, and the particular purpose to be served by the bid sample should be definitely stated, the specification to apply in all other respects.

I-8. Federal Specifications do not include all types, classes, grades, sizes, etc., of the commodities indicated by the titles of the specifications, or which are commercially available, but are intended to cover the types, etc., which are suitable for Federal Government requirements.

I-9. An Index of Federal Specifications may be obtained upon application as noted in paragraph next below, price to be obtained from the Superintendent of Documents.

I-10. Copies of this specification and of JJJ-O-331, TT-T-291, LLL-T-791 and TT-P-141 may be obtained upon application, accompanied by money order, coupon, or cash, to Superintendent of Documents, Government Printing Office, Washington, D. C. Price

of TT-R-251, TT-T-291, JJJ-O-331, and LLL-T-791, 5 cents each; TT-P-141, 10 cents.

U. S. GOVERNMENT PRINTING OFFICE: 1942

For sale by the Superintendent of Documents, Washington, D. C. Price 5 cents